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Diseases of the Aorta

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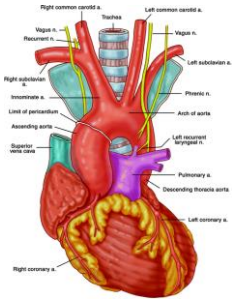
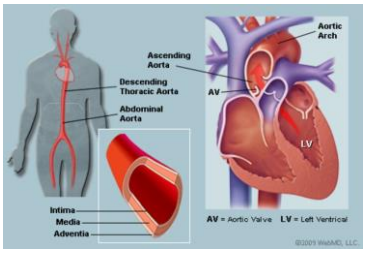
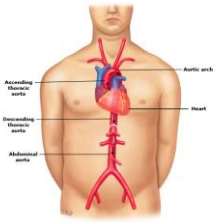
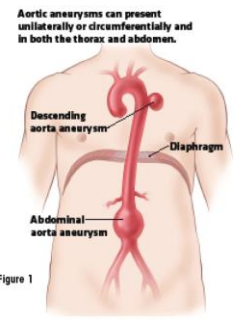
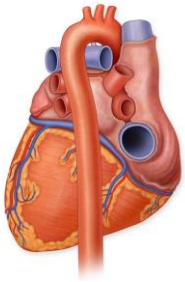


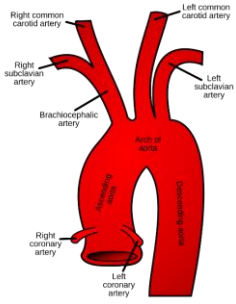


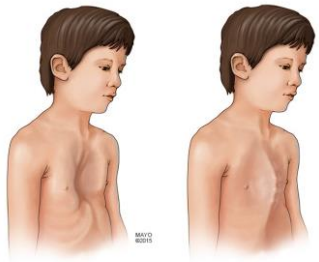


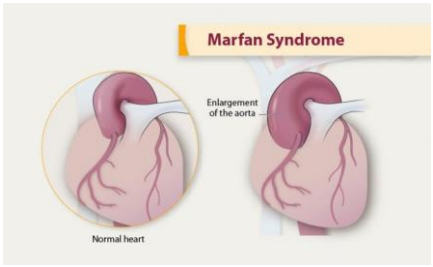
DISEASES OF THE AORTA



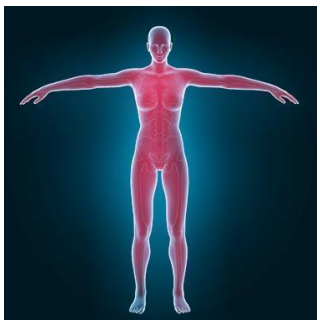


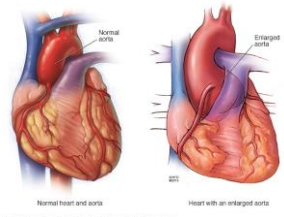






MARFAN SYNDROME



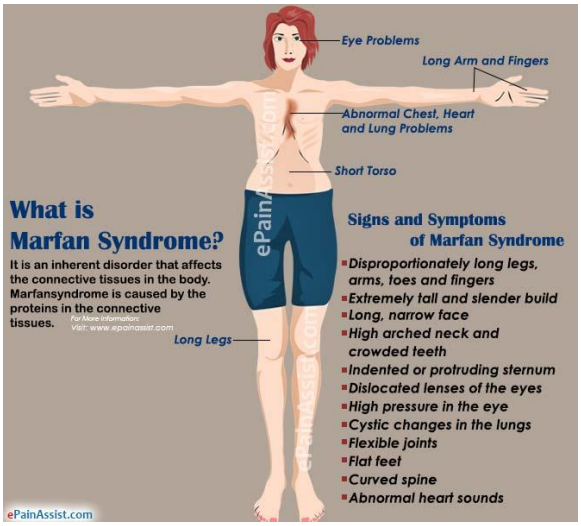


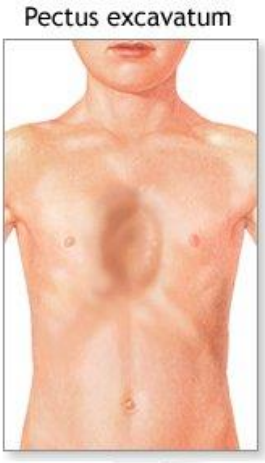
Definition

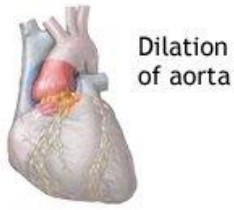
- **Connective tissue disease** (connective tissue is made of protein and provides a framework for the organs, essential for growth and development); involves skeleton, eyes, nervous system, skin, lungs, heart, and blood vessels
- **Genetic disorder**, heritable – 75% of the patients inherit it from the parent
- **Marfan syndrome** cause **increased elasticity of the aortic wall** because of the deficiency of connective tissue and ineffective cross-linking of collagen, that can result in aortic dilatation, dissection, and rupture

Physical appearance

Tall and slender habitus, pectus excavatum (hollow shape), very long and flexible extremities



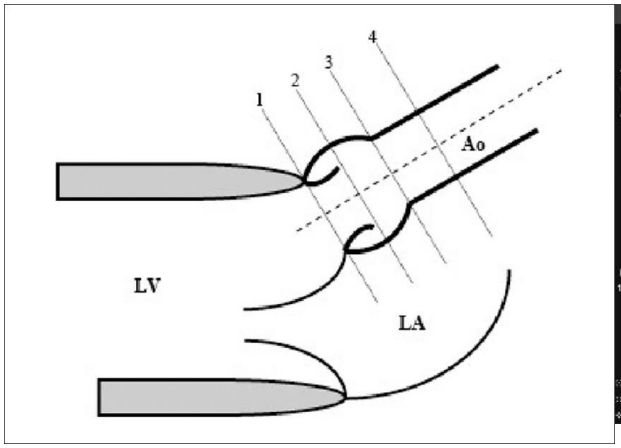


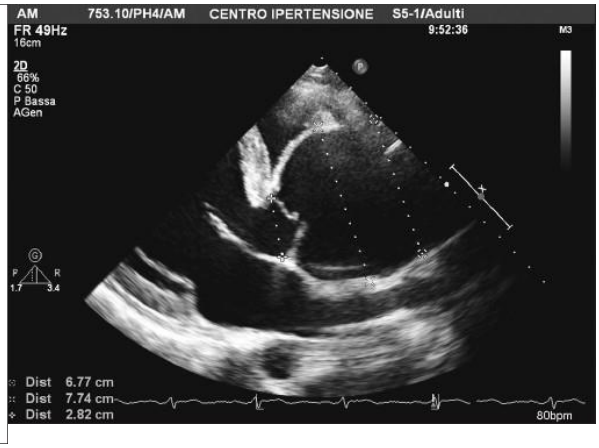


Abraham Lincoln ?

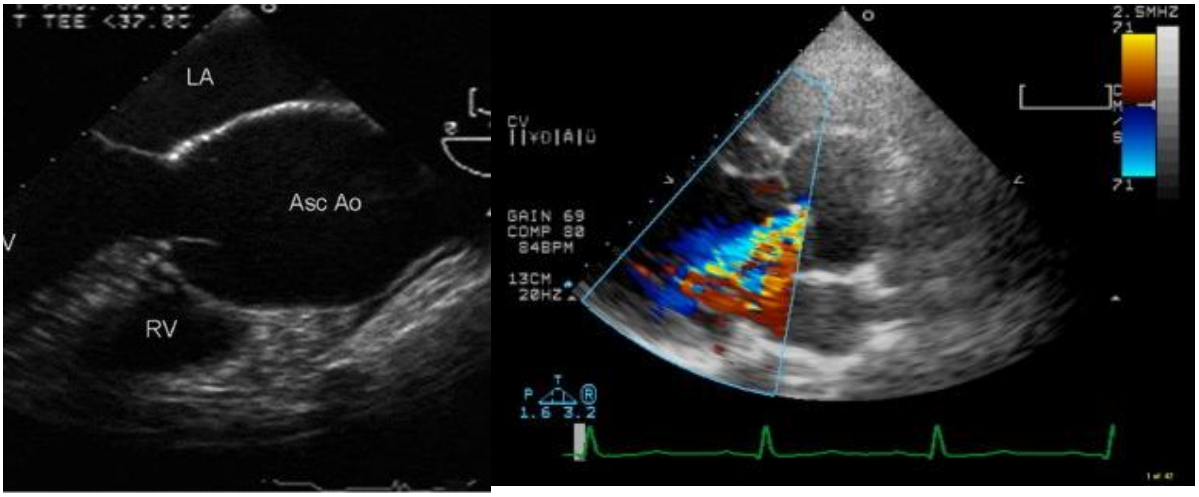
Echo findings

- Dilatation of the proximal ascending aorta (possible dissection)
- Aortic regurgitation
- Mitral valve prolapse (holosystolic)
- Mitral regurgitation
- Tricuspid valve prolapse
- Tricuspid regurgitation



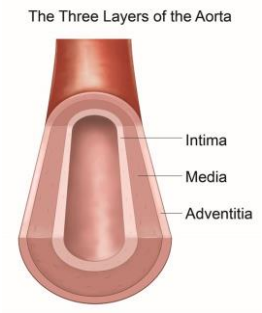


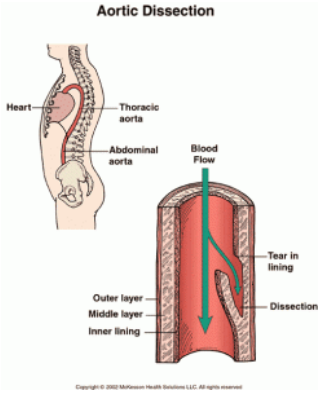
1- LVOT level
2- Sinuses of Valsalva level
3- Sinotubular junction level
4- Ascending aorta level

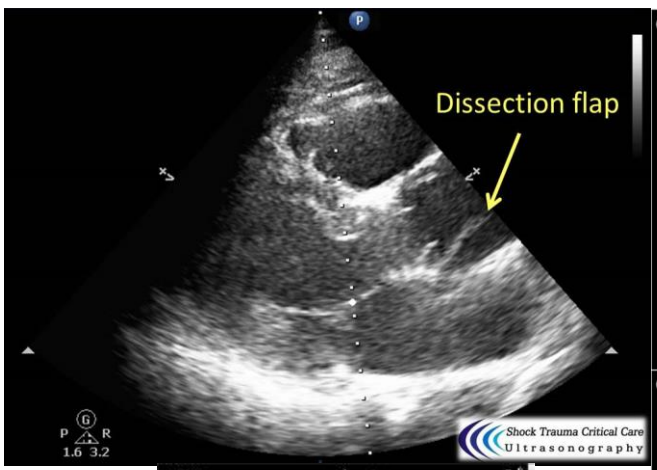


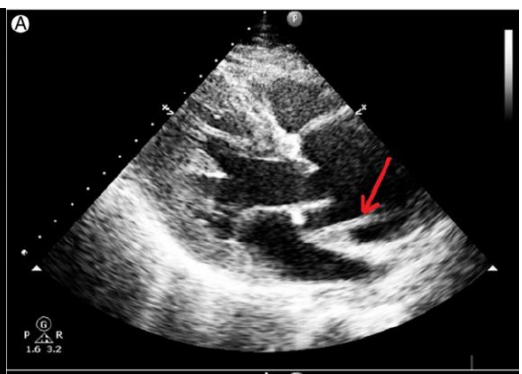
AORTIC DISSECTION

- **Definition:** a life threatening condition, when a tear occurs in the intimal lining of the aorta – separation of the layers of the aorta. The tear creates a false lumen or intimal flap. Blood enters the false lumen , destroys the media









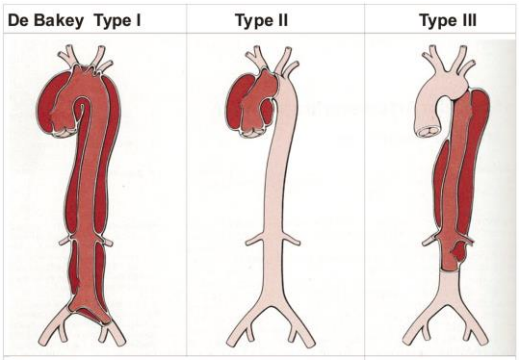
ETIOLOGY

- HTN
- Atherosclerosis
- Trauma
- Hereditary connective tissue disease(Marfan syndrome)
- Pregnancy
- Preexisting aortic aneurysm – dilatation of the aorta
- Men experience aortic dissection more than women

CLASSIFICATION

- **Stanford system:** based on the site of the intimal tear
- - Type A(proximal): tear is in the ascending aorta – surgical treatment
- - Type B(distal): tear is in the descending aorta – medical treatment

- **DeBakey system:** based on the anatomic location
- - Type I: involves the ascending aorta, aortic arch and the descending aorta
- - Type II: involves ascending aorta
- - Type III: involves descending aorta



De Bakey

Type I	Originates in the ascending aorta, propagates at least to the aortic arch and often beyond it distally
Type II	Originates in and is confined to the ascending aorta
Type III	Originates in the descending aorta and extends distally down the aorta or, rarely, retrograde into the aortic arch and ascending aorta

Stanford

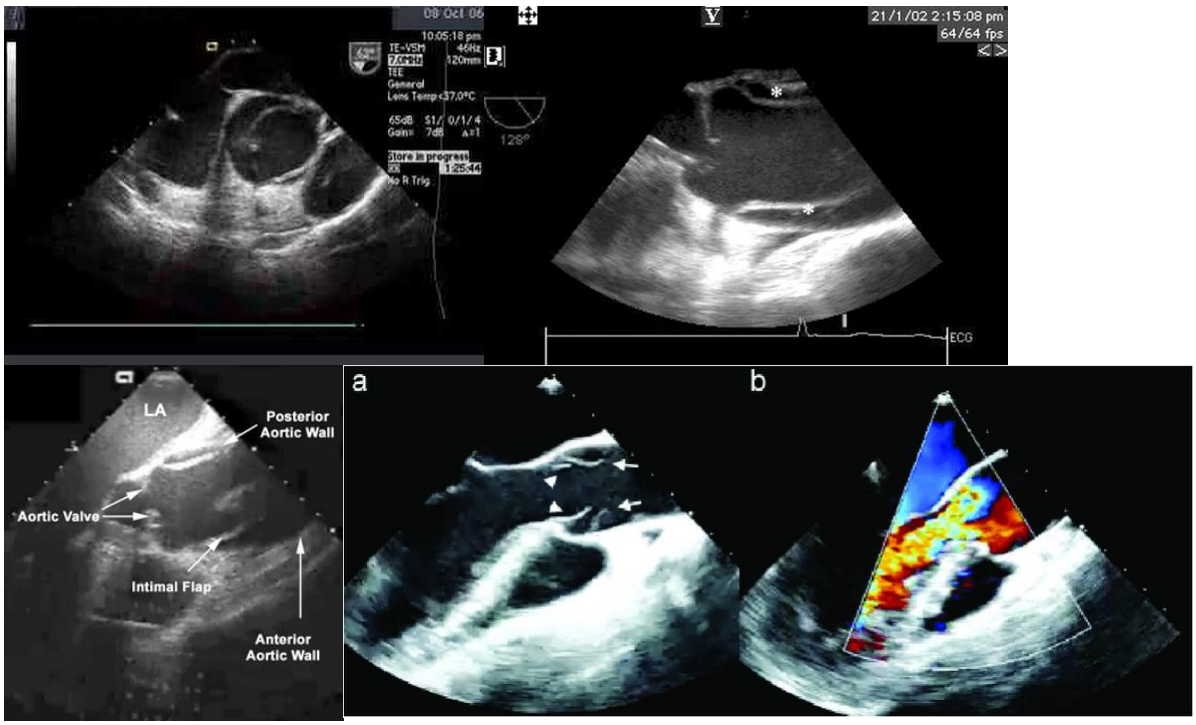
Type A	All dissections involving the ascending aorta, regardless of the site of origin
Type B	All dissections not involving the ascending aorta

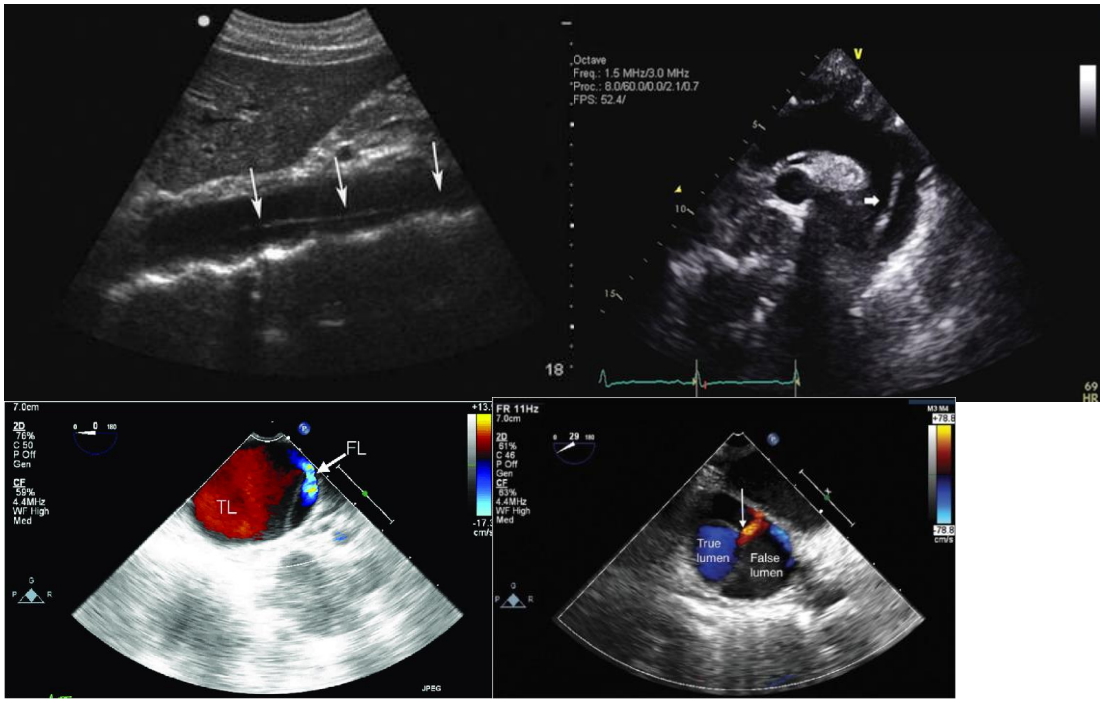
SYMPTOMS

- Sharp pain in the chest or abdomen, or in the back (differential diagnosis with CAD)
- The point of pain usually correlates with the location of the tear
- The pain tends to move with the worsening of the dissection
- The most common complication – rupture of the aorta

ECHO

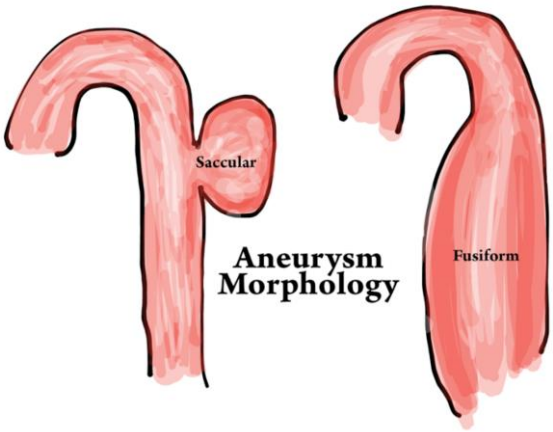
- Utilize as many views as possible: PLAX, PSAX, Suprasternal, Subcostal, 5ch, 3 ch Apical
- Dilated aortic root, dilated ascending aorta, dilated aortic arch
- Presence of the intimal flap and false lumen
- Aortic insufficiency (at least moderate to severe)

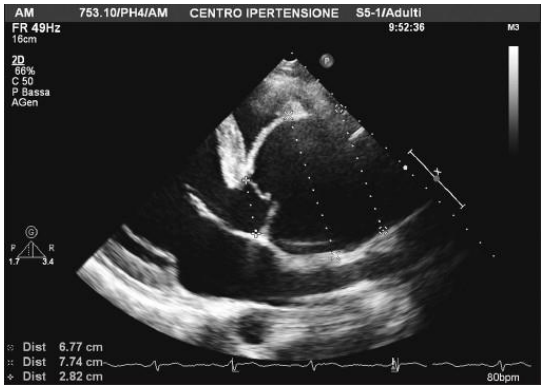




AORTIC ANEURYSM

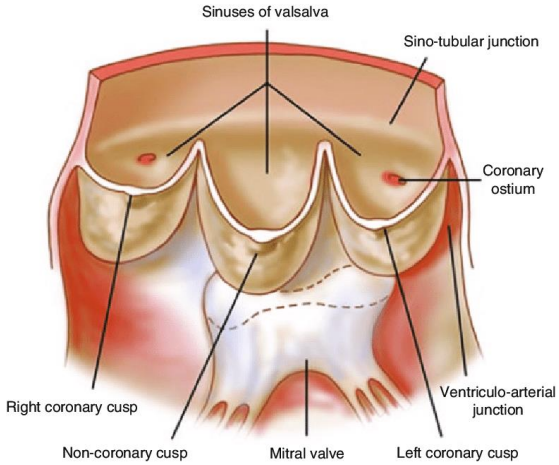
- An abnormal dilatation of the aorta
- 2 types: saccular (“pouch”) and fusiform (uniform dilatation of the entire circumference of the aorta)
- Congenital or acquired: systemic HTN, atherosclerosis, smoking, trauma





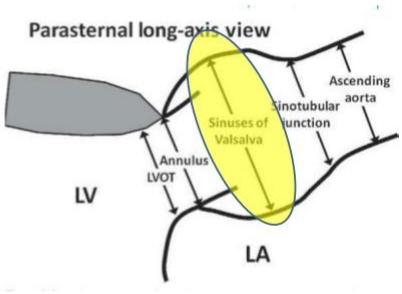
SINUS OF VALSALVA ANEURYSM

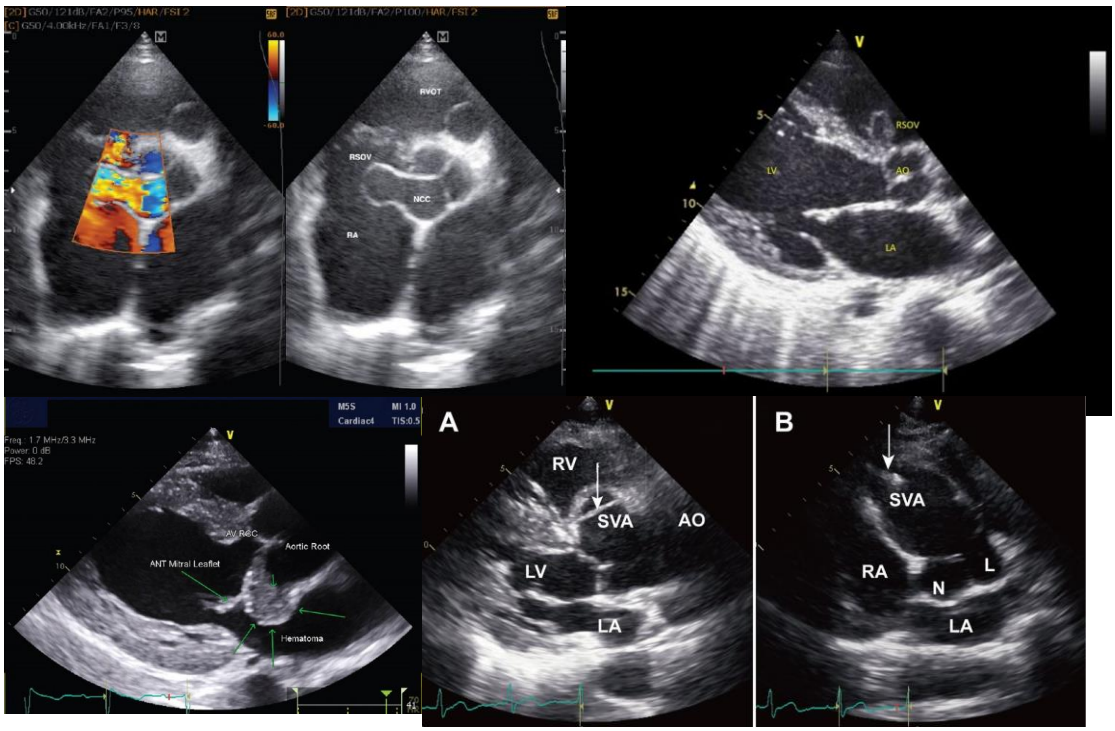
- There are 3 sinuses of Valsalva located right above the level of AV
- It's a saccular type of aneurysm
- Most likely only one sinus is affected, and most likely the right coronary sinus

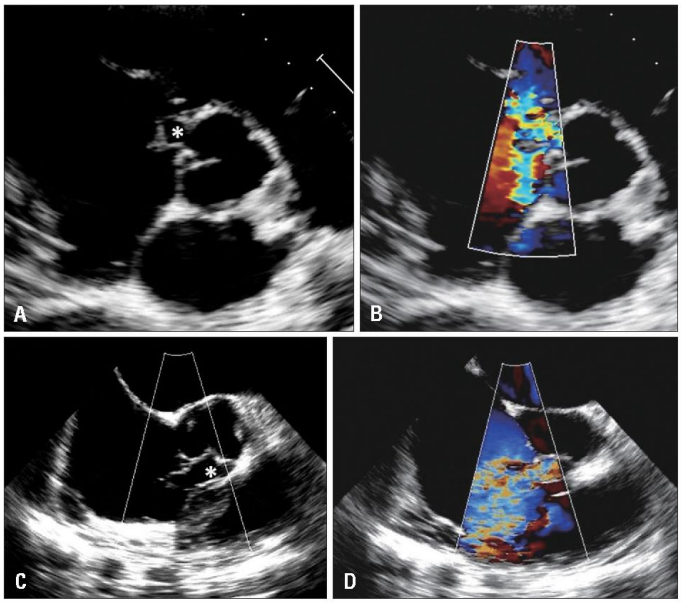


- Aortic root Dilation?

18-40 yrs:
0.97+(1.12 BSA)
>40yrs:
1.92+(0.74 BSA)
Always abnormal
If > 5 cm







oracic echocardiography, parasternal short axis view at level of great vessels, revealed rupture of right sinus o